

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently amended): A transmission system, comprising:

a sending device for converting higher-layer protocol data to continuous blocks of a fixed length, inserting idle blocks between said continuous blocks to match the sending rate to the transmission rate of the transmission line, and transmitting;

at least one stage of relay devices for receiving said continuous blocks and said idle blocks, discarding these idle blocks and continuous blocks containing bit errors to extract only ~~said-valid~~ continuous blocks, and then inserting idle blocks between said valid continuous blocks to match the sending rate to the transmission rate of the transmission line ~~on-the~~ a transmission side and transmitting to a prescribed transfer destination; and

a receiving device for receiving said continuous blocks and said idle blocks from said relay device of the final stage, discarding these idle blocks and continuous blocks containing bit errors to extract only ~~said-valid~~ continuous blocks, and reconstructing said higher-layer protocol data from said valid continuous blocks.

2. (Currently amended): A transmission system according to claim 1, wherein:

said sending device generates 18-byte blocks by converting said higher-layer protocol data to a length of 133 bits in accordance with prescribed rules and then adding supplementary information; and

said receiving device, after extracting only said 18-byte blocks ~~that are valid~~, removes said supplementary information from said 18-byte blocks to restore the length of 133 bits, and finally, reconstructs said higher-layer protocol data in accordance with prescribed rules.

3. (Original): A transmission system according to claim 2, wherein said sending device, said relay device, and said receiving device transmit signals by SONET protocol.

4. (Original): A transmission system according to claim 2, wherein
when said higher-layer protocol data takes the form of frames, said sending device converts said frames to a length of 133 bits by adding null data to the tails of said frames to make the frame length an integer multiple of 16 octets if the length of said frames is not an integer multiple of 16 octets, dividing said higher-layer protocol data into units of 16 octets, and adding to each unit of 16 octets five bits of type information indicating the position of that unit within said higher-layer protocol data; and

said receiving device reconstructs said higher-layer protocol data by performing a conversion that is the reverse of the conversion in said sending device.

5. (Currently amended): A transmission system according to claim 4, wherein said higher-layer protocol ~~are~~ is Ethernet.

6. (Currently amended): A transmission system according to claim 2, wherein, when said higher-layer protocol data takes the form of 8B/10B code:

said sending device converts said 8B/10B code to said blocks having a length of 133 bits by, for data code, fetching data portions of 8 bits, and for control code, representing control information by 4 bits and adding 4 bits of information indicating the position of the next control code, resulting in 8 bits, and ~~finally~~, adding five bits of information indicating the position of the next control code to the header of every 16 codes; and

said receiving device reconstructs said higher-layer protocol data by performing a conversion that is the reverse of the conversion in said sending device.

7. (Canceled).

8. (Currently amended): A relay device for transmitting blocks of a fixed length, comprising:

a demapping unit for receiving said blocks having a fixed length of 18 bytes and idle blocks that have been inserted between ~~these~~ said blocks having a fixed length;

an idle elimination unit for discarding said idle blocks and blocks having a fixed length containing bit errors and extracting only ~~said~~ said blocks having a fixed length that are valid; and

a mapping unit for matching the sending rate to the transmission rate of a transmission path by inserting idle blocks between said blocks having a fixed length that are valid and transmitting to a prescribed transfer destination.

9. (Canceled).

10. (Currently amended): A data transfer method for transmitting higher-layer protocol data in a transmission system that includes a sending device, at least one stage of relay devices, and a receiving device; said data transfer method comprising:

in said sending device:

a first step of converting higher-layer protocol data to continuous blocks having a fixed length; and

a second step of matching sending rate to the transmission rate of the transmission path by inserting idle blocks between said continuous blocks having a fixed length and transmitting;

in said relay device:

a third step of receiving said continuous blocks having a fixed length and said idle blocks from said sending device;

a fourth step of discarding the idle blocks and continuous blocks having a fixed length containing bit errors and extracting only said continuous blocks having a fixed length that are valid; and

a fifth step of matching the sending rate to the transmission rate in the transmission path by inserting idle blocks between said continuous blocks having a fixed length that are valid and transmitting to a prescribed transfer destination;

and in said receiving device:

a sixth step of receiving said continuous blocks having a fixed length and said idle blocks from the final stage relay device;

a seventh step of discarding said idle blocks and continuous blocks having a fixed length containing bit errors and extracting only ~~said~~ continuous blocks having a fixed length that are valid; and

an eighth step of reconstructing said higher-layer protocol data from said continuous blocks having a fixed length that are valid.

11. (Original): A data transfer method according to claim 10, wherein:

in said first step, 18-byte blocks are generated by first converting said higher-layer protocol data to a length of 133 bits in accordance with prescribed rules and then adding supplementary information; and

in said eighth step, said supplementary information is removed from said blocks to restore the length of 133 bits, and further, said higher-layer protocol data are reconstructed in accordance with prescribed rules.

12. (Currently amended): A data transfer method for transmitting higher-layer protocol data by means of a transmission system, comprising:

a first step of converting higher-layer protocol data to continuous blocks of a fixed length;

a second step of transferring within said transmission system while regulating transmission rate by inserting or deleting idle blocks between said blocks and deleting continuous blocks containing bit errors; and

a third step of discarding said idle blocks and reconstructing said higher-layer protocol data from said blocks that are valid.

13. (Original): A data transfer method according to claim 12, wherein:

in said first step, 18-byte blocks are generated by first converting said higher-layer protocol data to a length of 133 bits in accordance with prescribed rules and then adding supplementary information; and

in said third step, said supplementary information is removed from said blocks to restore the length of 133 bits, and further, said higher-layer protocol data are reconstructed in accordance with prescribed rules.

14. (New): A transmission system according to claim 1, wherein said at least one stage of relay devices discards continuous blocks containing bit errors received by said at least one stage of relay devices based on a condition of a capacity of a storage buffer.

15. (New): The relay device of claim 8, wherein the fixed length of said blocks is 18 bytes.

16. (New): The relay device of claim 8, wherein said idle elimination unit discards continuous blocks containing bit errors based on a condition of a capacity of a storage buffer.

17. (New): A data transfer method according to claim 10, wherein in said fourth step said continuous blocks containing bit errors received by said relay device are discarded based on a condition of a capacity of a storage buffer.